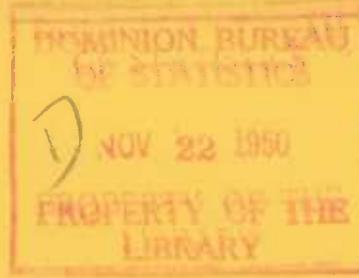


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GOVERNMENT OF CANADA



THE
SILVER - LEAD - ZINC
MINING INDUSTRY

1949





DOMINION BUREAU OF STATISTICS - DEPARTMENT OF TRADE AND COMMERCE

THE SILVER-LEAD-ZINC MINING INDUSTRY

1949

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Prepared in the Mining, Metallurgical and Chemical Section,
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NOTICE

It has been the practice of the Bureau of Statistics, since 1920, to issue an annual printed report on the Mineral Production of Canada. This report was comprised to a large extent of the data which had already been issued in bulletin form as statistics for each industry were completed. The final report was necessarily late in being issued, and its main use was for library purposes and for historical research. It also had the advantage of having complete statistics of the Canadian Mining Industry for a year in one volume.

Such a procedure necessitated the preparation of new manuscript, duplication of proof-reading, and extra costs in type-setting and printing. In order to avoid this extra cost, a system has been devised whereby libraries and other similar organizations may file the separate reports in a ring binder as issued, and if they so desire, may have them bound in a volume when the series for the year is complete.

The reports have been paged in such a manner that when bound they will correspond to the chapters of the annual printed report hitherto issued, but which will now be discontinued.

The following reports will constitute the complete volume on Mineral Statistics of Canada:

- A General Review of the Mining Industry
- B The Gold Mining Industry
- C The Silver-Lead-Zinc Mining Industry
- D The Nickel-Copper Mining, Smelting and Refining Industry
- E The Miscellaneous Metal Mining Industry
- F The Non-ferrous Smelting and Refining Industry
- G The Coal Mining Industry
- H The Natural Gas and Crude Petroleum Industry
- I The Asbestos Mining Industry
- J The Feldspar and Quartz Mining Industry
- K The Gypsum Industry
- L The Peat Industry
- M The Salt Industry
- N The Talc and Soapstone Industry
- O The Miscellaneous Industrial or Non-metallic Minerals Mining Industry
- P The Cement Manufacturing Industry
- Q The Clay and Clay Products Industry
- R The Lime Industry
- S The Sand and Gravel Industry
- T The Stone Industry
- U Contract Diamond Drilling in the Mining Industry
- V Appendix — Explanatory notes on the method of computing the quantities and values of the Mineral Production of Canada

THE SILVER-LEAD-ZINC MINING INDUSTRY

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Definition of the Industry — General statistical data contained in this report pertain only to the mining of silver-cobalt and silver-lead-zinc ores. However, the output figures for specific metals represent the total production from all sources.

Silver mining is not a distinct mining industry in Canada inasmuch as the silver-bearing minerals usually occur in association with other metals of economic value — with lead and zinc; with copper, nickel and arsenic; with lode and placer free gold; in copper-gold and nickel-copper ores, and at Great

Bear Lake, Northwest Territory, with pitchblende. Silver-lead-zinc mining is a very important industry in British Columbia and, to a lesser extent, in the Yukon Territory. In Eastern Canada, lead and zinc ores have been mined in Ontario, Quebec, Nova Scotia and Newfoundland.

It should be noted that, in addition to its recovery from silver-lead ores, zinc is produced in large quantities from copper-gold-silver ores mined in Quebec, Manitoba and Saskatchewan.

(a) The Silver-Lead-Zinc Mining Industry

During 1949 there were 101 firms engaged in mining, exploring or developing silver-lead-zinc ores, or silver-cobalt ores; in this group there were 70 producers. Employees numbered 5,438 to whom \$15,676,043 was paid in salaries and wages. Fuel

cost \$1,148,476 and 117,976,360 k.w.h. of purchased electricity cost \$841,156.

The gross value of production totalled \$100,349,929 which after deducting the cost of fuel, electricity, process supplies, freight and treatment charges showed net of \$67,108,165.

TABLE 1. Principal Statistics of the Silver-Lead-Zinc Mining Industry, 1940-1949

Year	Number of active operators ¹	Number of employees	Salaries and wages	Cost of fuel and electricity	Value of ores and concentrates sold ²
1940	82	1,585	3,052,532	468,157	16,439,530
1941	63	1,666	3,452,199	610,168	20,653,212
1942	44	2,185	4,730,370	791,772	23,504,642
1943	31	3,097	6,423,724	986,519	21,932,644
1944	20	2,769	5,810,290	860,231	16,802,759
1945	19	2,485	5,473,582	816,972	24,858,013
1946	33	2,451	5,987,111	780,136	44,925,620
1947	60	3,240	8,304,915	1,029,361	74,044,523
1948	77	4,040	11,421,086	1,454,697	103,431,315
1949					
Quebec ³	27	1,867	4,669,104	575,307	20,498,236
British Columbia.....	69	3,368	10,155,614	1,236,220	69,233,312
Yukon and Northwest Territories.....	5	203	851,325	178,105	1,447,636
Total 1949	101	5,438	15,676,043	1,989,632	91,179,184

1. Usually includes a number of small shippers from whom no particulars were received relating to wages, etc.

2. The value of fuel, purchased electricity and process supplies have been deducted.

3. Includes one mine in Newfoundland and 9 developing mines in Ontario.

MINERAL STATISTICS FOR CANADA

TABLE 2. Ore Mined and Milled in the Silver-Lead-Zinc Mining Industry, 1948 and 1949

		Yukon and Northwest Territories	British Columbia	Quebec ¹	Canada
		(Tons)			
1948					
Ore mined.....	37,830	2,556,025	553,994	3,147,849	
Ore milled.....	37,593	2,551,174	553,343	3,142,110	
Concentrates produced:					
Lead.....	5,754	228,329	9,850	243,933	
Zinc.....	—	270,225	46,290	316,515	
Pitchblende-silver.....	—	—	—	—	2
Gold precipitate.....	—	—	18	—	18
1949					
Ore mined.....	30,226	2,813,985	1,071,194	3,915,405	
Ore milled.....	29,494	2,793,234	1,071,259	3,893,987	
Concentrates produced:					
Lead.....	6,056	182,221	43,979	232,256	
Zinc.....	—	263,414	127,551	390,965	
Pitchblende-silver.....	—	—	—	—	2
Precipitates.....	—	—	27	—	27
Copper.....	—	—	16,066	—	16,066

1. Includes Newfoundland in 1949.

2. Data not available for publication.

TABLE 3. Destination of Shipments from Silver-Lead-Zinc Mines, 1948 and 1949

	Tons shipped	Gross value at shipping point	Total metal content without deductions			
			Gold	Silver	Lead	Zinc
1948						
To Canadian smelters:		\$	fine oz.	fine oz.	pounds	pounds
Lead ore.....	7,594	802,686	608	807,035	1,162,148	930,699
Lead concentrates.....	224,601	58,625,533	1,165	4,918,964	307,760,000	25,536,407
Zinc ore.....	1,161	28,883	1	7,303	54,543	217,811
Zinc concentrates.....	270,225	38,505,759	213	600,869	25,461,190	266,435,274
Dry ore.....	58	11,623	—	15,575	—	—
Tailings.....	901	13,171	—	1,760	68,915	11,497
Total Canadian.....	504,540	97,987,655	1,987	6,351,506	334,506,796	283,131,688
To Foreign smelters:						
Lead ore.....	400	181,833	3	101,814	632,941	—
Lead concentrates.....	15,441	4,296,698	10,160	2,315,028	13,092,841	—
Zinc concentrates ¹	45,672	5,896,599	—	—	—	51,698,120
Gold precipitates.....	18	554,420	7,856	381,397	—	—
Total Foreign.....	61,531	10,929,550	18,019	2,798,239	13,725,782	51,698,120
Total Shipments.....	566,071	108,917,205	20,006	9,149,745	347,232,578	344,829,708
Cost of freight.....	—	2,487,099	—	—	—	—
Cost of fuel and purchased electricity.....	—	1,454,697	—	—	—	—
Smelter charges.....	—	14,950,239	—	—	—	—
Cost of process supplies.....	—	4,031,193	—	—	—	—
Net Value of Shipments.....	—	85,993,977	—	—	—	—
1949						
To Canadian smelters:						
Lead ore.....	12,582	1,449,542	701	1,253,758	4,184,890	1,603,042
Lead concentrates.....	198,636	43,835,387	4,720	6,084,068	257,369,069	24,815,248
Zinc ore.....	8,922	202,129	—	11,473	620,497	1,418,122
Zinc concentrates.....	266,295	32,553,064	317	685,812	27,013,396	298,752,599
Tungsten concentrates.....	167	174,290	—	—	—	—
Bullion ² , residues.....	693	667,752	153	2,525	—	—
Total Canadian.....	487,295	78,882,164	5,891	8,037,636	289,187,852	326,619,011

Note. In addition to the metals contained in shipments listed in Table 3, there are considerable quantities of lead and silver contained in ores shipped from certain gold mines in British Columbia. Cadmium, bismuth, antimony, tin and sulphur are also recovered from the silver-lead-zinc ores produced in this industry.

1. Does not include any zinc concentrates produced from copper-gold-zinc ores in Quebec, Manitoba, Saskatchewan or British Columbia.

2. Includes 669,076 pounds of tin bullion.

THE SILVER-LEAD-ZINC MINING INDUSTRY

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TABLE 3. Destination of Shipments from Silver-Lead-Zinc Mines, 1948 and 1949 - Concluded

	Tons shipped	Gross value at shipping point	Total metal content without deductions			
			Gold	Silver	Lead	Zinc
	\$	fine oz.	fine oz.	pounds	pounds	
1949 - Concluded						
To Foreign smelters:						
Lead concentrates.....	36,200	5,613,926	5,925	634,474	41,421,636	8,915,214
Zinc concentrates ¹	122,508	12,438,281	2,578	244,669	4,517,964	131,315,039
Copper concentrates.....	16,066	1,790,910	4,063	318,277	2,177,138	2,676,392
Bullion, precipitates.....	64	1,624,648	10,331	1,631,046	-	-
Total Foreign	174,838	21,467,765	22,897	2,828,466	48,116,738	142,906,645
Total Shipments	662,133	100,349,929	28,788	10,866,102	337,304,590	469,523,656
Cost of freight.....	-	4,489,182	-	-	-	-
Cost of fuel and purchased electricity.....	-	1,989,632	-	-	-	-
Smelter charges.....	-	19,581,837	-	-	-	-
Cost of process supplies.....	-	7,181,113	-	-	-	-
Net Value of Shipments	-	67,108,165	-	-	-	-

Note. In addition to the metals contained in shipments listed in Table 3, there are considerable quantities of lead and silver contained in ores shipped from certain gold mines in British Columbia. Cadmium, bismuth, antimony, tin and sulphur are also recovered from the silver-lead-zinc ores produced in this industry.

1. Does not include any zinc concentrates produced from copper-gold-zinc ores in Quebec, Manitoba, Saskatchewan or British Columbia.

TABLE 4. Employees and Earnings in the Silver-Lead-Zinc Mining Industry, 1940-1949

Year	Administrative		Workmen		Total employees	Earnings		Total earnings
	Male	Female	Male	Female		Administrative	Workmen	
	No.	No.	No.	No.		No.	\$	
1940.....	224	20	1,341	-	1,585	519,705	2,532,827	3,052,532
1941.....	217	22	1,427	-	1,666	526,818	2,925,381	3,452,199
1942.....	281	27	1,877	-	2,185	711,770	4,018,600	4,730,370
1943.....	359	48	2,646	44	3,097	940,099	5,483,625	8,423,724
1944.....	318	56	2,336	59	2,789	920,827	4,889,463	5,810,290
1945.....	309	57	2,068	51	2,485	935,838	4,537,744	5,473,582
1946.....	336	63	2,030	22	2,451	1,047,121	4,939,990	5,987,111
1947.....	328	36	2,847	31	3,240	1,446,827	6,858,088	8,304,915
1948.....	497	44	3,452	47	4,040	1,880,694	9,540,392	11,421,086
1949.....	616	44	4,704	74	5,438	2,473,762	13,202,281	15,676,043

TABLE 5. Number of Workmen, by Months, in the Silver-Lead-Zinc Mining Industry, 1948 and 1949

Month	Total	1948		1949				Total	
		Mine		Mill					
		Surface		Underground	Male				
		Male	Female	Male	Male	Female			
January.....	3,169	1,519	59	2,381	632	6	4,597		
February.....	3,272	1,459	61	2,349	665	6	4,540		
March.....	3,336	1,449	58	2,369	686	6	4,568		
April.....	3,381	1,493	58	2,351	681	5	4,588		
May.....	3,565	1,624	65	2,375	711	7	4,782		
June.....	3,636	1,635	66	2,254	704	7	4,866		
July.....	3,736	1,741	68	2,242	738	7	4,796		
August.....	3,591	1,782	70	2,283	768	8	4,911		
September.....	3,489	1,694	64	2,357	775	7	4,897		
October.....	3,476	1,729	56	2,460	796	5	5,046		
November.....	3,530	1,502	58	2,585	837	6	4,986		
December.....	3,585	1,317	57	2,568	835	2	4,779		
Average.....	3,499	1,584	68	2,382	738	6	4,778		

MINERAL STATISTICS FOR CANADA

TABLE 6. Drilling Completed on Silver-Lead-Zinc Deposits, 1948 and 1949

	Footage Drilled	
	1948	1949
Diamond drilling for exploration and testing:		
By mining companies with their own personnel and equipment.....	118,991	119,788
By diamond drilling contractors	152,956	292,605
Other diamond drilling:		
Blast hole diamond drilling:		
By mining companies with their own personnel and equipment.....	689,461	607,184
By diamond drilling contractors	1,319	21,094
Drilling by percussion or other machines ¹	1,141,819	3,467,248

1. Not complete as records are unobtainable at certain mines.

TABLE 7. Taxes Paid in 1948 and 1949 by Silver-Lead-Zinc Mining and Smelting Companies

Tax Paid	1948	1949
	\$	\$
Dominion income tax.....	16,417,993	13,510,192
Dominion excess profits tax	202,871	-
Provincial tax	4,908,112	3,624,011
Municipal tax	411,217	451,299

Silver

Production of new silver in 1949 from all types of Canadian ores amounted to 17,641,493 troy ounces valued at \$13,098,808 compared with 16,109,892 ounces worth \$12,082,487 in the preceding year. Newfoundland's production is included in the 1949 figures.

British Columbia was the leading producer with 7,573,506 ounces; Quebec was next with 3,250,578 ounces; then Ontario with 2,562,859 ounces; Yukon, 1,562,730 ounces; Saskatchewan and Manitoba, 2,036,275 ounces; and Newfoundland, 585,026 ounces. The remainder originated in Northwest Territories, Alberta and Nova Scotia.

TABLE 8. Production of Silver (In All Forms) from Canadian Ores, 1940-1949

Year	Ounces	Cents per ounce	Year	Ounces	Cents per ounce
1940.....	23,833,752	38.25	1945.....	12,942,906	47.0
1941.....	21,754,408	38.26	1946.....	12,544,100	83.65
1942.....	20,695,101	42.17	1947.....	12,504,018	72.0
1943.....	17,344,569	45.25	1948.....	16,109,982	75.0
1944.....	13,627,109	43.0	1949.....	17,641,493	74.25

TABLE 9. Production of Silver (All Forms) by Months, 1948 and 1949

Month	1948	1949	Month	1948	1949
				fine ounces	
January.....	1,059,502	990,835	July.....	1,970,853	1,761,798
February	1,145,020	983,619	August.....	1,678,115	1,213,992
March	1,215,564	1,317,934	September	1,360,157	1,161,567
April	1,204,934	1,264,655	October	1,527,350	1,923,039
May	1,186,090	1,521,789	November.....	1,235,792	1,526,528
June.....	1,320,440	2,231,099	December.....	1,206,165	1,744,638
			Total.....	16,109,982	17,641,493

TABLE 10. Production of Silver Bullion, 1942-1949

	fine ounces		fine ounces
1942.....	17,390,000	1946.....	10,774,000
1943.....	15,870,000	1947.....	10,196,000
1944.....	12,020,000	1948.....	12,186,000
1945.....	10,890,000	1949.....	14,469,000

TABLE 11. Silver Production According to Nature of Ores, by Provinces, 1949

Province	Crude placer gold	Auriferous quartz ores	Copper-gold-silver ores	Nickel-copper ores	Silver-lead-zinc ores	Silver-cobalt and other ores	Total
	(Ounces)						
Newfoundland.....	—	—	—	—	585,026	—	585,026
Nova Scotia	—	3	—	—	—	—	3
Quebec	—	150,311	1,613,479	—	1,486,786	—	3,250,578
Ontario.....	—	404,425	—	1,202,989	—	955,445	2,562,859
Manitoba	—	14,566	539,700	—	—	—	554,266
Saskatchewan.....	1	—	1,482,008	—	—	—	1,482,009
Alberta	11	—	—	—	—	—	11
British Columbia.....	1,769	45,677	333,005	—	7,193,055 ¹	—	7,573,506
Northwest Territories.....	4	65,419	—	—	—	5,082	70,505
Yukon.....	18,018	—	—	—	1,544,712	—	1,562,730
Canada.....	19,803	680,401	3,968,192	1,202,989	10,809,581	960,527	17,641,493

1. Contains a relatively small quantity recovered from gold ores.

TABLE 12. Production of Silver, by Provinces, and Point of Computation, 1948 and 1949

	1948		1949	
	Quantity (ounces)	\$	Quantity (ounces)	\$
NEWFOUNDLAND:				
In ores and concentrates exported.....			585,028	434,382
NOVA SCOTIA:				
In gold bullion and concentrates.....	8	6	3	2
QUEBEC:				
In anode copper	1,062,019	796,514	1,616,423	1,200,194
In gold bullion made and in concentrates exported.....	1,314,735	986,052	1,634,155	1,213,360
Total.....	2,376,754	1,782,566	3,250,578	2,413,534
ONTARIO:				
In silver recovered in Canada from cobalt ores	707,971	530,978	938,054	696,505
In gold bullion.....	408,376	306,282	396,172	294,158
In blister copper.....	1,295,997	971,998	1,124,239	834,747
In ores, concentrates, residues, matte, etc., exported	797,763	598,322	104,394	77,513
Total.....	3,210,107	2,407,380	2,562,859	1,902,923
MANITOBA:				
In blister copper.....	728,267	546,201	539,700	400,727
In gold bullion (gold mines) and ores exported.....	9,031	6,773	14,566	10,815
Total.....	737,298	552,974	554,286	411,542
SASKATCHEWAN:				
In blister copper	1,323,900	992,925	1,482,008	1,100,391
In gold bullion and in crude alluvial gold	—	—	1	1
Total.....	1,323,900	992,925	1,482,009	1,100,392
ALBERTA:				
In alluvial gold.....	7	5	11	8

Note. For 1949 silver was valued at 74.25 cents per fine ounce, the average price of domestic sales and of sales on the New York market adjusted and expressed in Canadian funds; for 1948 the corresponding price was 75 cents.

1. Complete data relating to recovery of silver from pitchblende ores are not available since 1942.

MINERAL STATISTICS FOR CANADA

TABLE 12. Production of Silver, by Provinces and Point of Computation, 1948 and 1949 — Concluded

	1948		1949	
	Quantity	Value	Quantity	Value
	(ounces)	\$	(ounces)	\$
BRITISH COLUMBIA:				
In alluvial gold.....	2,017	1,513	1,769	1,313
In gold bullion.....	33,850	25,387	31,961	23,731
In base bullion and in ores, etc., exported.....	6,682,041	5,011,531	7,539,776	5,598,284
Total	6,717,908	5,038,431	7,573,506	5,623,328
NORTHWEST TERRITORIES:				
In pitchblende-silver ores shipped to smelters ¹ and in gold bullion.....	25,382	19,036	70,505	52,350
YUKON:				
In alluvial gold.....	12,421	9,316	18,018	13,378
In silver-lead ores to smelters.....	1,706,197	1,279,648	1,544,712	1,146,949
Total	1,718,618	1,288,964	1,562,730	1,160,327
Canada, Total	16,109,982	12,082,487	17,641,493	13,098,808

Note. For 1949 silver was valued at 74.25 cents per fine ounce, the average price of domestic sales and of sales on the New York market adjusted and expressed in Canadian funds; for 1948 the corresponding price was 75 cents.

1. Complete data relating to recovery of silver from pitchblende ores are not available since 1942.

TABLE 13. Source of Silver Production, by Percentages, 1945-1949

Source	1945	1946	1947	1948	1949
In silver-cobalt ores.....	3.68	3.05	2.41	6.03	3.41
In base bullion ¹	39.51	46.72	43.96	41.04	32.81
In gold ores (bullion and placer).....	3.38	3.79	4.03	3.82	3.74
In blister and anode copper ²	36.56	31.72	31.43	27.46	27.00
In matte, copper ores and silver-lead ores, etc., exported (other than silver-cobalt ores)....	16.87	14.72	18.17	21.60	10.94
	100.0	100.0	100.0	100.0	100.0

1. Chiefly from silver-lead ores. Includes silver bullion from silver-lead ores.

2. From copper-gold-silver and nickel-copper ores.

TABLE 14. Estimated Consumption of Fine Silver in Canada for Industrial Purposes, 1940-1949

	In anodes for plating	In making sterling silver and other silver alloys (except lead- silver alloys)	In making silver nitrate	In lead-silver alloys	Miscellaneous	Total
(Ounces)						
1940.....	600,000	600,000	665,000	Not available	200,000	2,065,000
1941.....	720,000	1,200,000	790,000		250,000	2,960,000
1942.....	800,000	1,600,000	840,000	240,000	250,000	3,730,000
1943.....	800,000	1,620,000	890,000	350,000	300,000	3,960,000
1944.....	900,000	2,650,000	890,000	180,000	360,000	4,980,000
1945.....	960,000	3,740,000	1,040,000	130,000	410,000	6,280,000
1946.....	1,301,000	3,490,000	937,000	40,000	404,000	6,172,000
1947.....	1,155,000	1,384,000	874,000	37,000	253,000	3,703,000
1948.....	1,365,000	1,800,000	956,000	5,000	248,000	4,374,000
1949.....	2,463,000	2,903,000	969,000	2,500	196,000	6,533,500

Note. Amounts used for coinage not included in above figures.

TABLE 15. Imports and Exports of Silver and Silver Products, 1948 and 1949

	1948		1949	
	Quantity (Ounces)	Value \$	Quantity	Value
			(Ounces)	\$
IMPORTS:				
Silver, unmanufactured.....	717,817	528,460	1,332,713	972,814
Silver, manufactures of, n.o.p.	—	530,819	—	585,042
Toilet articles of which the most important component, in value, is sterling silver.....	—	4,923	—	24,848
Total	—	1,064,202	—	1,582,704
EXPORTS:				
Silver contained in ore, concentrates, etc.	3,294,691	2,433,953	4,054,614	3,005,184
Silver bullion (Canadian).....	5,434,364	4,026,174	6,211,912	4,568,287
Silver manufactures.....	—	646,036	—	277,808
Total	—	7,106,163	—	7,851,279

TABLE 16. Silver Production of the World (From the Annual Reports of the American Bureau of Metal Statistics)

	1947	1948	1949	(Fine Troy ounces)
NORTH AMERICA:				
United States.....	36,053,000	36,111,000	34,559,000	
Canada.....	12,504,018	16,109,982	17,377,194	
Mexico.....	49,197,505	45,800,000	49,453,741	
Newfoundland.....	956,000	882,000	860,485	
Total North America	98,710,523	98,902,982	102,250,420	
Central America and West Indies				
	3,100,000	3,700,000	4,200,000	
SOUTH AMERICA:				
Argentina.....	2,435,400	1,201,900	1,249,421	
Bolivia.....	6,273,100	7,562,034	7,000,000	
Chile.....	747,037	861,942	799,687	
Colombia.....	110,830	109,188	110,000	
Ecuador.....	156,931	226,664	277,300	
Peru.....	10,782,660	9,288,489	10,609,404	
Other South America.....	50,000	50,000	50,000	
Total South America	20,519,958	19,300,217	20,095,792	
EUROPE:				
Czechoslovakia.....	643,000	1,600,000	—	
Finland.....	170,000	167,600	168,000	
France.....	474,309	494,403	395,445	
Great Britain.....	25,000	25,000	—	
Italy.....	512,200	676,100	793,400	
Hungary.....	—	—	—	
Norway.....	218,620	167,180	99,665	
Romania.....	481,200	—	—	
Spain.....	638,178	339,408	—	
Sweden.....	1,088,631	1,137,917	1,140,682	
Australia.....	9,527,140	10,057,519	8,494,000	
New Guinea.....	27,000	33,000	—	
New Zealand.....	221,984	232,563	232,599	
Fiji.....	33,237	29,187	—	
ASIA:				
India.....	14,749	—	—	
Formosa.....	—	6,870	—	
Japan.....	1,909,400	2,231,300	—	
Korea.....	—	38,504	—	
Burma.....	—	450,000	—	
AFRICA:				
Algeria.....	24,434	—	—	
Belgian Congo.....	4,057,201	3,805,531	4,549,225	
Rhodesia.....	165,217	81,404	84,495	
Transvaal, Cape Colony and Natal.....	1,147,694	1,170,951	1,154,454	
French Morocco.....	356,704	—	—	
Gold Coast.....	50,000	—	—	
Southwest Africa.....	—	301,168	552,298	
Tunis.....	53,851	—	—	
Other Africa.....	27,000	30,000	—	

Note. World totals are not shown, as production from Russia, Siberia, and some other countries is not known.

Lead

Production of new lead from Canadian ores in 1949 amounted to 159,775 tons compared with 167,251 tons in 1948. The tonnage from Newfoundland included in 1949 for the first time was insufficient to counterbalance the decrease in production in British Columbia. Output is calculated as the lead in base bullion plus the recoverable lead content in ores exported. Production of refined lead from all sources, including foreign ores treated in Canadian smelters, amounted to 146,149 tons.

The silver-lead-zinc mines of British Columbia produce the major portion of the nation's lead. Lead-silver ores from the Yukon territory are smelted at Trail in British Columbia. Part of the lead concentrates from the lead-zinc mines of Quebec and Newfoundland was exported for treatment and part was shipped to the Trail smelter for processing.

TABLE 17. Production¹ of New Lead, 1940-1949

Year	Tons	\$	Average price per pound (Canadian funds)	Year	Tons	\$	Average price per pound (Canadian funds)
			¢				¢
1940.....	235,925	15,863,605	3.362	1945.....	173,497	17,349,723	5.00
1941.....	230,084	15,470,815	3.362	1946.....	176,987	23,893,230	6.75
1942.....	256,071	17,218,233	3.362	1947.....	161,668	44,200,124	13.67
1943.....	222,030	16,670,041	3.754	1948.....	167,251	60,344,146	18.04
1944.....	152,291	13,706,199	4.500	1949.....	159,775	50,488,879	15.8

1. Primary lead in base bullion produced plus recoverable lead in ores exported.

TABLE 18. Production of Lead, by Months, 1948 and 1949

Month	Lead (all forms)		Refined Lead ¹	
	1948	1949	1948	1949
(Tons)				
January.....	11,267	10,748	10,845	10,189
February.....	13,200	10,579	10,645	11,306
March.....	12,702	9,776	13,409	10,110
April.....	13,077	11,223	12,885	10,372
May.....	12,975	17,861	13,081	12,836
June.....	11,317	14,160	11,356	12,996
July.....	14,570	11,005	9,314	7,022
August.....	16,903	12,661	12,010	14,816
September.....	15,338	12,760	15,900	14,580
October.....	16,049	13,278	17,747	14,335
November.....	16,031	13,469	16,275	14,208
December.....	13,822	22,255	16,558	13,379
Total.....	167,251	159,775	160,025	146,149

1. Includes lead refined from foreign ores.

TABLE 19. Production, Imports and Exports of Lead, 1948 and 1949

	1948		1949	
	Pounds	Value	Pounds	Value
	\$	\$		
PRODUCTION:				
Newfoundland.....	—	—	37,216,398	5,880,191
Quebec.....	9,521,844	1,717,741	11,598,163	1,832,510
Ontario.....	343,883	62,036	—	—
British Columbia.....	320,037,525	57,734,770	265,378,899	41,929,866
Yukon.....	4,598,665	829,599	5,356,405	846,312
Total.....	334,501,917	60,344,146	319,549,865	50,488,879
IMPORTS:				
Pig and block.....	116,366	19,830	4,307,432	557,711
Old and scrap.....	36,231	3,361	887,047	98,190
Bars and sheets.....	8,211	2,237	11,187	2,565
Lead pipe.....	—	—	1,444	395
Acetate of lead.....	79,415	16,547	112,190	21,538
Nitrate of lead.....	81,505	15,402	67,953	12,809
Other manufactures.....	—	225,106	—	222,549
Shots and bullets.....	3,164	1,095	9,020	2,517
Lead tetraethyl, compounds of.....	14,571,006	5,131,472	17,171,342	6,356,843
Lead capsules for bottles.....	—	39,229	—	60,321
Lead pigments:				
Litharge.....	411,100	86,448	501,300	93,075
Dry white lead.....	110,060	19,578	39,000	9,414
White lead, ground in oil.....	1,612	403	850	230
Dry red lead and orange mineral.....	41,795	8,830	139,025	31,133
Total.....	—	5,569,538	—	7,469,290
EXPORTS:				
Lead, scrap.....	—	—	3,812,100	419,327
Lead, contained in ore.....	11,214,200	1,563,492	39,782,800	4,741,371
Pig lead.....	207,524,300	32,758,514	227,067,100	36,725,204
White lead.....	3,553,700	707,751	1,173,000	219,731
Lead, manufactures.....	—	361,745	—	215,435
Lead pipe.....	—	—	541,600	85,699
Total.....	—	35,391,502	—	42,406,767

TABLE 20. Production, Imports, Exports and Domestic Consumption of Refined Lead, 1940-1949

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks ¹ at end of period
(Tons of 2,000 pounds)					
1940.....	220,087	37,621	151,546	121	62,653
1941.....	226,027	58,403	184,289	148	42,371
1942.....	243,306	58,203	210,782	9	32,975
1943.....	223,871	53,090	154,473	10	34,131
1944.....	143,556	51,671	102,879	10	26,325
1945.....	163,142	62,263	107,291	8	19,900
1946.....	165,744	62,784	102,000	6	21,230
1947.....	162,000	64,131	118,214	—	9,134
1948.....	160,025	59,542	108,302	53	3,866
1949.....	146,149	51,281	99,010	2,154	10,959

1. Producers' and consumers'.

TABLE 21. Consumption of Refined Lead by Principal End Uses, 1947-1949

Uses	1947	1948	1949
Solders and alloys ¹	15,806	15,642	12,135
White lead, red lead and litharge.....	10,289	9,386	5,026
Storage batteries ²	18,489	18,482	18,095
Foil and collapsible tubes.....	911	400	196
Ammunition.....	349	342	675
Iron and steel.....	1,921	1,774	1,511
Cable covering.....	12,624	12,247	12,822
Miscellaneous.....	3,762	1,269	1,021
Total.....	64,131	59,542	51,281

1. Does not include lead in antimonial lead for storage batteries.
 2. Includes new lead and lead content of antimonial lead.

TABLE 22. Lead Production of the World on Mine Basis, 1947-1949 (From the Annual Reports of the American Bureau of Metal Statistics)

	1947	1948	1949
	(tons)		
United States.....	384,221	390,476	404,032
Canada.....	161,668	167,251	160,491
Newfoundland.....	23,300	22,100	-
Mexico.....	216,579	217,700	257,585
Total North America.....	785,768	797,527	822,108
Argentina.....	23,000	24,000	19,882
Bolivia.....	12,467	28,230	-
Peru.....	60,421	53,503	72,043
Total South America.....	95,888	105,733	-
Austria.....	1,684	3,308	4,737
Czechoslovakia.....	1	1	1
France.....	8,262	8,171	11,033
Germany.....	16,266	24,636	45,134
Great Britain.....	3,144	2,554	2,379
Greece.....	992	1,411	2,261
Italy.....	26,212	33,142	38,545
Poland.....	8,600	1	1
Romania.....	3,853	1	1
Spain.....	33,560	30,084	32,463
Sweden.....	22,992	25,991	26,345
Yugoslavia.....	1	1	-
Burma.....	-	8,344	-
China, including Hong Kong.....	2	2	2
Korea.....	-	287	99
Japan.....	6,429	7,368	10,038
India.....	212	700	664
Australia.....	209,664	229,034	224,261
Algeria.....	1,427	1,151	1,262
Belgian Congo.....	923	550	230
French Morocco.....	24,140	31,127	40,601
French Equatorial Africa.....	2,975	2,869	806
Tunis.....	13,602	14,744	16,678
Rhodesia.....	17,518	14,582	15,619
Southwest Africa.....	14,431	27,958	35,243

Note. Omitted are Russia, Manchuria and Turkey.

1. Unknown.

2. Unknown, but probably small.

Zinc

Production of new zinc from Canadian ores during 1949 amounted to 288,262 tons compared with 234,164 tons in 1948. Recoverable zinc in the Newfoundland zinc concentrates were included in 1949 for the first time. Nearly all the zinc ores mined in British Columbia were shipped to the Trail smelter for treatment. The zinc recovered at Hudson Bay Mining and Smelting Company's refinery at Flin Flon, Manitoba, originated in the copper-gold-silver ores

from the Flin Flon, Cuprus and Sherritt-Gordon mines. In Quebec, zinc concentrates were produced from the ores, classified as copper-gold-silver, of the East Sullivan, Normetal, Quemont and Waite-Amulet mines, and from the lead-zinc ores of the Golden Manitou, New Calumet, Anacon, and Candego mines. Most of the zinc concentrates produced in eastern Canada were exported, a small portion was shipped to British Columbia for treatment.

TABLE 23. Production¹ of Zinc from All Types of Canadian Ores, 1940-1949

Year	Tons	\$	Average price per pound (Canadian funds)	Year	Tons	\$	Average price per pound (Canadian funds)
			¢				¢
1940.....	212,014	14,463,624	3.411	1945.....	258,607	33,308,556	6.44
1941.....	256,191	17,477,337	3.411	1946.....	235,310	36,755,450	7.81
1942.....	290,129	19,792,579	3.411	1947.....	207,863	46,686,010	11.23
1943.....	305,377	24,430,174	4.00	1948.....	234,164	65,237,956	13.93
1944.....	275,412	23,685,405	4.30	1949.....	288,262	76,372,147	13.25

Note. The total value of Canadian zinc production since the first recording of Canadian zinc statistics in 1898, and inclusive of 1949, totalled \$538,893,900.

1. Refined zinc made in Canada plus recoverable zinc in ores, etc., exported.

TABLE 24. Production of Zinc, by Months, 1948 and 1949

Month	Primary Zinc in All Forms		Refined Zinc	
	1948	1949	1948	1949
(Tons)				
January.....	16,978	21,764	14,449	18,176
February.....	17,335	19,846	14,425	15,965
March.....	18,394	23,324	15,033	18,737
April.....	19,330	17,151	15,545	17,161
May.....	20,258	24,632	15,670	18,292
June.....	18,828	27,263	14,496	17,613
July.....	21,546	28,345	17,490	16,640
August.....	20,510	25,737	17,249	17,401
September.....	19,766	22,706	17,320	16,149
October.....	22,094	25,615	18,627	16,293
November.....	20,958	24,727	17,983	16,144
December.....	18,167	27,152	18,288	17,474
Total.....	234,164	288,262	196,575	206,045

TABLE 25. Production of Refined Zinc, 1940-1949

Year	Average price per pound	Short tons	Year	Average price per pound	Short tons
1940.....	3.411	185,722	1945.....	6.44	182,268
1941.....	3.411	213,608	1946.....	7.81	185,683
1942.....	3.411	215,795	1947.....	11.23	178,264
1943.....	4.00	206,510	1948.....	13.93	196,575
1944.....	4.30	168,518	1949.....	13.25	206,045

TABLE 26. Zinc Production According to Types of Ores, by Provinces, 1947-1949

Year and Province	Recovered from copper-gold-silver ores	Recovered from silver-lead-zinc and other ores	Total
(pounds)			
1947			
Quebec.....	35,078,583	34,384,342	69,462,925
Manitoba.....	27,753,131	—	27,753,131
Saskatchewan.....	65,503,602	—	65,503,602
British Columbia.....	4,164,033	248,842,135	253,006,168
Total Canada.....	132,499,349	283,226,477	415,725,826
1948			
Quebec.....	51,186,597	44,571,442	95,758,039
Manitoba.....	41,315,045	—	41,315,045
Saskatchewan.....	60,943,757	—	60,943,757
British Columbia.....	5,620,225	264,689,970	270,310,195
Total Canada.....	159,065,624	309,261,412	468,327,036
1949			
Newfoundland.....	—	63,818,908	63,818,908
Quebec.....	74,332,795	50,988,503	125,321,298
Manitoba.....	34,081,713	—	34,081,713
Saskatchewan.....	64,266,312	—	64,266,312
British Columbia.....	11,188,239	277,000,381	288,188,620
Yukon.....	—	847,246	847,246
Total Canada.....	183,869,059	392,655,038	576,524,097

TABLE 27. Production, Imports and Exports of Zinc, 1948 and 1949

	1948		1949	
	Pounds	Value	Pounds	Value
PRODUCTION:		\$		\$
Newfoundland.....	Not included	Not included	63,818,908	8,454,091
Quebec.....	95,758,039	13,339,095	125,321,298	16,601,312
Manitoba.....	41,315,045	5,755,186	34,081,713	4,514,805
Saskatchewan.....	60,943,757	8,489,465	64,266,312	8,513,358
British Columbia.....	270,310,195	37,654,210	288,188,620	38,176,346
Yukon	—	—	647,246	112,235
Total	468,327,036	65,237,956	576,524,097	76,372,147
IMPORTS:				
Zinc dust.....	477,900	75,583	727,200	130,257
Zinc in blocks, pigs, bars and rods, and zinc plates, n.o.p.....	32,500	7,325	83,700	22,648
Zinc in sheets and strips, and zinc plates for marine boilers.....	5,865,000	1,070,153	4,208,700	858,774
Zinc slugs for dry batteries.....	—	393,859	—	424,156
Zinc white (zinc oxide).....	3,464,454	396,478	2,187,376	269,516
Zinc sulphate.....	799,707	39,130	1,355,936	81,714
Zinc chloride.....	474,561	32,140	471,221	39,213
Zinc, manufactures of, n.o.p.....	—	1,447,452	—	1,643,549
Lithopone	29,574,145	2,026,567	16,281,728	1,070,903
Total	—	5,491,687	—	4,540,730
EXPORTS:				
Zinc, manufactures of.....	—	159,232	—	162,203
Zinc, contained in ore.....	108,453,600	4,752,238	213,368,600	12,562,931
Zinc, scrap, dross and ashes.....	14,437,100	899,061	12,048,500	653,756
Zinc, spelter	289,773,000	36,685,950	336,613,600	42,482,982
Total	—	42,496,481	—	55,861,872

TABLE 28. Production, Imports, Exports and Domestic Consumption of Refined Zinc, 1940-1949

Year	Production	Domestic consumption	Exports	Imports	Stocks ¹ at end of period
(Tons of 2,000 pounds)					
1940.....	185,722	36,913	167,073	—	10,028
1941.....	213,608	56,708	141,086	—	14,903
1942.....	215,795	84,000	152,159	58	9,080
1943.....	206,510	80,599	129,315	13	26,100
1944.....	168,518	67,359	95,985	4	33,220
1945.....	183,317	55,663	121,969	—	37,700
1946.....	185,683	54,969	151,885	—	23,265
1947.....	178,264	51,065	127,036	—	21,275
1948.....	196,575	46,899	147,454	—	13,349
1949.....	206,045	41,578	159,353	—	12,101

1. Producers' and consumers' stocks.

TABLE 29. Consumption of Refined Zinc, by Industries, 1945-1948

Industry	1945	1946	1947	1948
(Tons of 2,000 pounds)				
In brass foundries.....	16,520	16,687	8,300	10,718
In white metal foundries.....	5,566	5,406	3,660	3,395
In iron and steel (chiefly galvanizing).....	19,000	16,310	21,515	22,888
In chemicals (zinc oxide, etc.).....	12,006	13,566	15,345	7,580
In electrical apparatus.....	1,571	2,670	1,862	1,794
In non-ferrous smelters.....	200	160	143	—
In ammunition.....	600	—	—	—
In miscellaneous industries.....	200	170	240	524
Total	55,663	54,969	51,065	46,899

TABLE 30. World's Production of Slab Zinc¹ 1947-1949 (From the Annual Reports of the American Bureau of Metal Statistics)

Country	1947	1948	1949
	(tons)		
United States ²	802,495	787,764	816,453
United States	59,542	62,320	53,660
Mexico	53,030	55,732	58,162
Canada	178,167	196,575	206,781
Total North America	1,093,234	1,102,391	1,135,056
Argentina	2,900	1,766	2,919
Peru	1,191	1,540	1,337
Belgium	146,618	169,468	194,631
France	45,828	61,803	67,148
Germany	22,843	45,589	95,812
Great Britain	76,490	80,621	71,798
Italy	26,588	29,495	29,384
Netherlands	10,507	14,978	17,212
Norway	38,118	46,298	45,240
Poland	79,005	96,000	—
Spain	21,874	23,338	21,530
Australia	77,752	91,607	90,536
Japan	16,343	23,342	35,622
Rhodesia	23,676	24,830	25,592

1. The statistics in this table are the summaries of production as made by the metallurgical works in the several countries.

2. Production from ores, foreign and domestic.

3. Production from secondary material.

Cadmium

Cadmium is recovered from the silver-lead-zinc ores treated by the smelter of the Consolidated Mining and Smelting Company of Canada Limited, Trail, British Columbia, and from the copper-gold-zinc ores processed at the smelter of the Hudson

Bay Mining and Smelting Company Limited, Flin Flon, Manitoba. Output in 1949 was 849,541 pounds compared with 766,090 pounds in 1948. Cadmium produced from foreign ores is not included in these figures.

TABLE 31. Cadmium Recovered From Canadian Ores, 1940-1949

—	From copper-gold-silver-zinc ores	From silver-lead-zinc ores	Total
			(pounds)
1940	129,336	778,791	908,127
1941	169,917	1,081,374	1,251,291
1942	176,550	972,413	1,148,963
1943	187,938	598,673	786,611
1944	140,560	386,410	526,970
1945	135,632	510,432	646,064
1946	166,333	636,315	802,648
1947	172,896	545,638	718,534
1948	148,864	617,226	766,090
1949	181,092	665,449	846,541

TABLE 32. Production, Exports and Domestic Consumption of Cadmium Metal, 1940-1949

Year	Production	Domestic consumption	Exports
			(Tons of 2,000 pounds)
1940	454	75	399
1941	625	149	455
1942	574	207	400
1943	393	168	286
1944	263	108	192
1945	323	87	175
1946	401	96	296
1947	359	72	309
1948	383	92	275
1949	423	113	279

(b) The Silver-Cobalt Mining Industry

There has been a renewed interest in the Cobalt area of Temiskaming district in Ontario. Some of the mines have been re-opened and development work indicates that the silver ore may be mined profitably. Lessees continue to operate some of the prominent producers of the past and make shipments of cobalt-silver ores varying from very small to fairly large tonnages.

The silver-cobalt mining industry employed 264 persons who received \$607,782 in salaries and wages. Fuel cost \$49,031 and 3,850,980 k.w.h. of electricity cost \$33,704. Process supplies used were worth \$127,661.

TABLE 33. Principal Statistics of the Silver-Cobalt Mining Industry, 1940-1949

Year	Number of active operators ¹	Number of operating mines ²	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of bullion ore, concentrates or residues sold
			\$		\$	\$	\$
1940.....	48	44	337,080	123	158,024	10,900	809,263
1941.....	24	14	439,877	182	229,984	40,875	662,443
1942.....	13	14	358,691	192	283,980	68,349	600,207 ³
1943.....	20	21	587,039	221	290,654	74,691	578,861 ³
1944.....	10	11	4	165	260,575	48,323	323,280 ³
1945.....	7	8	4	166	247,203	49,553	82,508
1946.....	11	11	4	247	404,012	58,712	207,483
1947.....	12	12	4	183	359,963	62,148	253,363
1948.....	17	12	4	172	413,095	100,779	321,415
1949.....	18	9	4	264	607,782	82,735	503,572

1. Includes lessees shipping from dumps.

2. Includes properties on which operations were of a salvage nature only.

3. Includes value of ores consigned to the United States Government stock pile at Deloro, Ontario.

4. Not recorded.

TABLE 34. Summary¹ of Operations of Silver-Cobalt Mines and Mills, 1947-1949

		1947	1948	1949
Number of mines in operation ²		12	17	18
Ore mined.....	tons	10,572	14,541	38,798
Ore salvaged from surface ³	tons	4,323	8,905	—
Ore treated (milled) ⁴	tons	16,656	18,155	26,917
Concentrates produced.....	tons	217	874	745
Gross value of bullion, ore, concentrates and residues sold.....	\$	343,937	499,068	822,881
Cost of freight.....	\$	1,571	8,056	8,889
Smelter charges.....	\$	1,417	22,770	100,024
Cost of fuel and purchased electricity used.....	\$	62,148	100,779	82,735
Cost of process supplies used.....	\$	25,238	46,048	127,661
Net value of sales.....	\$	253,563	321,415	503,572

1. Partly estimated as data unobtainable from some small shippers.

2. All mines located in northern Ontario and includes properties on which the operations consisted only in salvaging of ore from dumps, etc.

3. Complete data not available.

4. Does not include crude ore shipped.

TABLE 35. Mine and Mill Shipments of Canadian Silver-Cobalt Ores and Concentrates, 1948 and 1949

	Gross weight	Metal content			
		Silver	Cobalt	Nickel	Copper
	(tons)	oz.	lb.	lb.	lb.
1948					
To Canadian smelters and to Government stockpile at Deloro, Ontario.....	859	530,673	31,431	6,322	9,598
To Foreign plants.....	519	19,894	115,739	45,531	10,302
Total.....	1,378	550,567	147,170	53,853	19,900
1949					
To Canadian smelters and to Government stockpile at Deloro, Ontario.....	972	1,203,895	44,616	4,912	3,407
To Foreign plants.....	241	20,826	49,560	18,061	2,846
Total.....	1,213	1,224,721	94,176	22,973	5,253

TABLE 36. Employees and Earnings in the Silver-Cobalt Mining Industry, 1940-1949

Year	Administrative		Workmen		Total employees	Earnings		Total earnings
	Male	Female	Male	Female		Administrative	Workmen	
	No.	No.	No.	No.		\$	\$	
1940.....	17	1	105	—	123	40,970	117,054	158,024
1941.....	22	3	157	—	182	60,914	169,070	229,984
1942.....	24	3	165	—	192	63,722	220,258	283,980
1943.....	34	6	180	1	221	56,570	234,084	290,654
1944.....	20	4	140	1	165	43,960	216,615	260,575
1945.....	14	5	146	1	166	42,267	204,936	247,203
1946.....	20	3	223	1	247	59,085	344,927	404,012
1947.....	21	3	158	1	183	75,807	284,156	359,963
1948.....	22	3	145	2	172	66,509	346,586	413,095
1949.....	28	2	231	3	264	87,598	520,184	607,782

TABLE 37. Number of Workmen on Payroll at End of Month in the Silver-Cobalt Mining Industry, 1948 and 1949

Month	1948						1949					
	Mine				Mill	Total	Mine				Mill	Total
	Surface		Under-ground	Male			Surface		Under-ground	Male		
	Male	Female	Male	Male			Male	Female	Male	Male		
January.....	54	1	54	3	112	53	2	97	14	186		
February.....	54	—	54	7	115	48	2	107	14	171		
March.....	58	—	64	13	135	52	2	124	17	195		
April.....	69	1	70	13	153	70	2	129	16	217		
May.....	61	1	78	12	152	81	2	142	16	241		
June.....	51	2	87	18	158	94	3	139	17	253		
July.....	42	2	97	16	157	104	3	148	16	271		
August.....	39	2	88	31	160	102	3	156	17	278		
September.....	39	2	102	36	179	89	3	134	19	245		
October.....	35	2	103	34	174	87	3	151	19	260		
November.....	37	2	77	15	131	73	3	139	20	235		
December.....	39	2	76	8	125	60	2	141	16	219		
Average.....	48	2	80	17	147	76	3	135	20	234		

Cobalt

Ores from the Cobalt area were treated by Deloro Smelting and Refining Co. Ltd., which produced metallic cobalt and cobalt compounds at Deloro, Ontario. Some of the ores from this area were exported to the United States and to the United Kingdom. For

the past three years the International Nickel Company of Canada Ltd. has been producing cobalt oxide at Port Colborne from the nickel-copper ores of the Sudbury district. Falconbridge Nickel Mines Ltd. plan to recover cobalt at its nickel refinery in Norway.

Arsenic

Data on arsenious oxide formerly included in this bulletin are now given in the report on the

Miscellaneous Industrial or Non-metallic Minerals Industry.

TABLE 38. Production of Cobalt from Canadian Ores, 1940-1949

Year	Pounds	Year	Pounds
1940.....	794,359	1945.....	109,123
1941.....	263,257	1946.....	73,900
1942.....	83,871 ¹	1947.....	572,673
1943.....	175,961 ¹	1948.....	1,544,852
1944.....	36,283 ¹	1949.....	619,065

1. Exclusive of cobalt in ores placed on United States Government stock pile at Deloro, Ontario, but includes metal in ores reshipped from this stock pile.

TABLE 39. Production of Cobalt from Canadian Ores, Imports and Exports, 1948 and 1949

	1948		1949	
	Quantity (pounds)	\$	Quantity (pounds)	\$
PRODUCTION:				
(In terms of metallic cobalt and cobalt in oxides and salts sold and in ores exported).....	1,544,852	2,029,178	619,065	952,469
IMPORTS:				
Cobalt ore.....	848,100	64,857	81,400	2,465
Oxide of cobalt.....	100	205	1,000	1,390
EXPORTS:				
Cobalt, contained in ore.....	871,000	641,320	49,300	37,301
Cobalt, metallic.....	31,410	61,824	12,000	23,638
Cobalt, alloys.....	88,734	466,478	34,179	206,800
Cobalt oxides and cobalt salts.....	876,895	1,032,710	590,538	742,088

TABLE 40. World Production of Cobalt, 1945-1949 (From the Annual Report of the American Bureau of Metal Statistics)

Country	1945	1946	1947	1948	1949
(pounds)					
Canada ¹	109,123	73,900	572,900	1,544,852	623,600
Northern Rhodesia ²	1,498,000	1,078,300	859,900	868,300	1,146,500
Belgian Congo ²	6,184,000	4,753,000	7,848,000	9,301,200	9,706,900
French Morocco.....	469,000	412,000	822,316	612,000	548,900

1. Metal recovered from smelter products plus cobalt contained in cobalt residues exported.
2. Cobalt content of alloys.

Principal Operators in the Silver-Lead-Zinc Mining Industry, 1949

Name of Operator	Head Office Address	Location of Mine
NEWFOUNDLAND:		
Buchans Mining Co. Ltd.	Water St., St. John's	Buchans
QUEBEC:		
Anacon Lead Mines Ltd.	330 Bay St., Toronto, Ontario.....	Mantauban les Mines
Ascot Metals Corporation Ltd.	Box 492, Sherbrooke	Moulton Hill
Barmont Mines Ltd. ¹	276 St. James St. West, Montreal.....	Abitibi
Candego Mines Ltd.	1085 Beaver Hall Hill, Montreal.....	Gaspé
Claude Lake Mines Ltd.	Sce. Anne des Monts.....	Boisbuisson twp.
Federal Zinc and Lead Co. Ltd.	708 Drummond Bldg., Montreal.....	Lemieux Tp.
Golden Manitou Mines Ltd.	30 Bay St., Toronto, Ontario	Bourlamaque Tp.
Gordona Mining Corp. Ltd. ¹	Box 278, Amos	Dalquier
Grand Calumet Mining Co. Ltd.	360 St. James St. West, Montreal	Calumet Island
Gulf Lead Mines Ltd.	330 Bay St., Toronto, Ontario	Hudson Bay
Lyall and Beldelman	1117 St. Catherine St. W., Montreal	Gaspé
MacDonald Mines Ltd. ¹	1085 Beaver Hall Hill, Montreal	Dufresnoy Tp.
Mogador Mines Ltd. ¹	276 rue St. Jacques Ouest, Montreal	Fiedmont
Mistassini Explorations Ltd.	184 Bay St., Toronto, Ontario	Mistassini
New Norzone Mines Ltd.	67 Yonge St., Toronto, Ontario	Montbelliard Tp.
New Calumet Mines Ltd.	25 King St. West, Toronto	Calumet
ONTARIO:		
Airways Exploration Ltd. ¹	17 Murray Bldg., Fort William	Dorion Tp.
Continental Lead Mines Ltd. ¹	501 - 67 Yonge St., Toronto	Fitzroy Tp.
Coulee Lead & Zinc Mines Ltd.	812 - 67 Yonge St., Toronto	Kowkash
Kingdon Mining Co. Ltd. ¹	128 Slater St., Ottawa	Galette
Rochette Gold Mines Ltd. ¹	5204 rue St. Andre, Montreal, Quebec	Long Lake
Lennox Mines Co. Ltd.	John St., Napanee	Enterprise
Stanton Lead Mines Ltd.	501 - 67 Yonge St., Toronto	Fitzroy Tp.
McWilliams Beardmore Mines Ltd.	100 Oriole Parkway, Toronto	Lybster Tp.
St. Regis Lead Mines Ltd.	501 - 67 Yonge St., Toronto	Sault Ste. Marie
BRITISH COLUMBIA:		
Ainsworth Consolidated Mines Ltd.	Ainsworth	Ainsworth
Alamo Silver-Lead Mining Co. Ltd. ¹	11 King St. West, Toronto, Ontario	Slocan
Centre Star	Ymir	Nelson
Base Metals Mining Corp. Ltd.	403 Temple Bldg., Toronto, Ontario	Field
B. C. Slocan-Rambler Mines (1947) Ltd.	New Denver	Slocan
Bellcore Mines Ltd.	Minto	Lillooet
Beverly Mines Ltd.	703 Rogers Bldg., Vancouver	McMurdo Creek
Besecker, L. D.	Kasio	Ainsworth
Burgess Bros. & Lundgren	Ymir	Nelson
Canadian Exploration Ltd.	Royal Bank Bldg., Vancouver	Salmo
Consolidated Mining & Smelting Co. of Canada Ltd.	Trail	Kimberley
Cronin, Babine Mines Ltd. ¹	85 Richmond St. W., Toronto, Ontario	Omineca
Cranberry Creek Gold Mining Co. Ltd.	361 Main St., Penticton	Beaverdell
Crowe, W. & Lotze, A. K.	Waneta	Silverton
Emerald Glacier Mine Ltd.	1403 Royal Bank Bldg., Vancouver	Tahtsa Lake
Emilson, Edward	Nelson	Ainsworth
Erickson Henry	Ymir	Ymir
Fairview Mining Co. Ltd.	626 Pender St., Vancouver	Osyoos
George Enterprise Mining Co. Ltd.	625 Port St., Victoria	Stewart
Grainger & Appleby	Invermere	Fort Steele
Hale, L. E. & R. G.	723 Silica St., Nelson	Slocan
Hallifax Mine	Box 1312, Rossland	Greenwood
Highland Bell Ltd.	844 West Hastings St., Vancouver	Greenwood
Hagemo & Sandmo	Bamberton	Beaverdell
Jokanovich R.	Stewart	Portland Canal
Johnston R. J.	1459 McQuarrie St., Trail	Nelson
Kaslo Silver Lead Co. (Inc.)	675 Dunsmuir St., Vancouver	Kaslo
Kidd, D. F.	844 West Hastings St., Vancouver	Revelstoke
Leadridge Mining Co. Ltd.	640 Pender St., Vancouver	Lardeau
Lovett, E. H.	1819 Acadia Road, Vancouver	Trail Creek
Lane, W. E.	Ainsworth	Ainsworth
McArthur, W. E.	Box 629, Greenwood	Greenwood
Mills, F.	Silverton	Slocan
New Jersey Zinc Explorations Ltd.	714 Yorkshire Bldg., Vancouver	Nelson
Noonday Mines Ltd.	Box 83, Nelson	Sandon
Nicholson, Mark	Moyle	Fort Steele
Olson, Halvorsen & Krane	715 Vernon St., Nelson	Sanca
Pearson, J.	4 Montcalm Rd., Trail	Nelson
Peterson, E. H.	Sandon	Sandon
Privateer Mine Ltd.	475 Howe St., Vancouver	Ainsworth
Rettallack Mines Ltd.	916 Stock Exchange Bldg., Vancouver	Ainsworth
Reeves MacDonald Mines Ltd.	413 Granville St., Vancouver	Nelson
Scranton Consolidated Mining Co.	444 Pacific Bldg., Portland, Ore.	Ainsworth
Santiago Mines Ltd.	423 Hamilton St., Vancouver	New Denver
Sherraden, R.	Ainsworth	Kaslo
Silbok Premier Mines Ltd.	911 Birks Bldg., Vancouver	Portland Canal
Silver Giant Mines Ltd.	16 East Hastings St., Vancouver	Spillimachene
Silver Ridge Mining Co. Ltd.	373 Baker St., Nelson	Sandon
Silver Bounty Mines Ltd.	567 Hornby St., Vancouver	Beaverdell
Silver Standard Mines Ltd.	602 W. Hastings St., Vancouver	Hazelton
Sheep Creek Gold Mines Ltd.	413 Granville St., Vancouver	Zincton
Silver Tip Gold Mines Ltd.	210 Pemberton Bldg., Victoria	Portland Canal
Smith, L. N.	Box 338, Vernon	Sandon
Star Mine	Box 175, Nelson	Ainsworth
Sunshine Lardeau Mines Ltd.	942 W. Pender St., Vancouver	Revelstoke
Sutcliffe, D. F.	Riondel	Ainsworth
Taylor, A. V.	New Denver	Slocan

¹. Active but not producing.

Principal Operators in the Silver-Lead-Zinc Mining Industry, 1949 — Concluded

Name of Operator	Head Office Address	Location of Mine
BRITISH COLUMBIA — Con.		
Torbit Silver Mines	350 Bay St., Toronto, Ont.	Portland Canal
Turk, J.	Ymir.....	Ymir
Vancouver Island Base Metals Ltd.	553 Granville St., Vancouver.....	Duncan
Van Roi Mines (1947) Ltd.	Box 102, New Denver.....	Silverton
Viola Mac Mines (B.C.) Ltd.	New Denver.....	Sandon
Wanke & Johnson	Greenwood.....	Westbridge
Western Exploration Co. Ltd.	Silverton.....	Slocan
Wilkie, R.	669 St. Paul St., Kamloops.....	Vernon
W.S. Mines.....	Box 1312, Rossland.....	Greenwood
Yale Lead & Zinc Mines Ltd.	330 Bay St., Toronto, Ont.	Ainsworth
Zambon & Lavalle.....	New Denver.....	Slocan
YUKON:		
East Bay Gold Ltd.	29 Sixth St., Noranda, Que.	McKay Hill
Nicol & Brefalt.....	Mayo Landing.....	Mayo
Settemier & Bermingham.....	Galena Hill.....	Mayo
United Keno Hill Mines Ltd.	85 Richmond St. W., Toronto, Ont.	Mayo
Rocket Galena Hill.....	Keno Hill.....	Mayo

List of Operators in the Silver-Cobalt Mining Industry, 1949

Name of Operator	Head Office Address	Location of Mine
ONTARIO :		
Ausic Mining & Reduction Co. Ltd. ¹	Box 643, Cobalt.....	Coleman Tp.
Canadian Cobalt & Metals Co. Ltd. ¹	111 Cote de la Montagne, Quebec, Que.	Cobalt
Castle-Trethwey Mines Ltd. ¹	25 King St. West, Toronto	O'Brien
Coe, J.	Cobalt.....	Coleman Tp.
Consolidated Lebel Oro Mines Ltd. ¹	330 Bay St., Toronto.....	Coleman Tp.
Cross Lake Lease (O'Brien).	Box 390, Cobalt.....	Coleman Tp.
Kerr Lake Lease.....	Box 569, Cobalt.....	Coleman Tp.
Mayfair Mines Ltd. ¹	156 Yonge St., Toronto.....	Coleman Tp.
Nipissing Mining Co. Ltd., The ¹	302 Bay St., Toronto.....	Cobalt
Mensilvo Mines Ltd.	96 Rloor St. W., Toronto	Coleman Tp.
Mercier Raoul	Box 547, Cobalt.....	Peterson Lake
Morgan-Silver-Cross Mines Ltd. ¹	1040 Bleury St., Montreal.....	Coleman Tp.
Nu-Silco Mines Ltd.	85 Richmond St. W., Toronto.....	Giroux Lake
O'Shaughnessy, L.J.	Box 411, Cobalt.....	Coleman Tp.
Silanco Mining & Refining Co. Ltd.	7 Prospect Ave., Cobalt	Cobalt
Silco Mines Ltd. ¹	67 Yonge St., Toronto	Gillies
Silver Arrow Mines Ltd.	85 Richmond St. W., Toronto	S. Lorrain
Silver Miller Mines Ltd.	66 King St. W., Toronto	Cobalt
Siscoe Metals Ltd.	907 Dominion Square Building, Montreal, Quebec	Haultain Tp.

Note. In addition to the names listed, there were some small shippers.

1. Active but no shipments made.



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